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ABSTRACT

Background information is presented on the history and operation of educational research and development (R&D) centers supported by the National Institute of Education (NIE). The objective is to provide information for the four study groups that are assisting NIE in identifying missions for center competition. In addition, some lessons that can be applied to the 1985 competition and to monitoring R&D centers in the future are suggested. Information was obtained from a literature review, interviews with center institutional monitors, and the experiences of a former R&D center program director who became a NIE staff member. Attention is directed to R&D center program management by the U.S. Office of Education during 1963-1972, the implementation and reversal of a program purchase policy under the management of NIE during 1972-1978; and an institutional support policy enacted by NIE during 1979-1983. The following issues are examined: whether the centers have been programmatic, whether the primary responsibility for identifying needed research projects and designing projects should be with the federal government or with investigators in the field, the sponsorship of centers by universities, and the relationship between research and practice. Four NIE program management issues are also covered. (SW)

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TWO DECADES OF EXPERIENCE WITH EDUCATION R&D CENTERS

Paper Prepared for the Laboratory and Center Coordination Committee

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TWO DECADES OF EXPERIENCE WITH EDUCATIONAL R&D CENTERS

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As the National Institute of Education begins a process of competing educational R&D centers to be funded in fiscal year 1985 it will have two decades of experience to draw upon. The first educational R&D centers were funded in 1964 under the Cooperative Research Act administered by the research program of the U. S. Office of Education. Within the next few years a total of eleven such centers were started. In addition, two centers were started under the vocational education legislation, and one large project was given center status. Of the fourteen, one became a regional laboratory (now defunct), four were discontinued, and nine were transferred to the National Institute of Education when the Institute was established in 1972 and are still in operation.

It is the purpose of this paper to provide some backgound for the four study groups that are assisting NIE in identifying missions for the center competition. It presents a short history of the R&D center program, identifies key issues in the operation of educational R&D centers, and suggests some lessons that can be applied to the new competition and to monitoring R&D centers by the Institute in the future. The paper is based on a review of the literature including studies of the program, interviews with several center institutional monitors, and the personal experience ofthe author, who directed the R&D Center Program from 1964 to 1972 and has been a senior staff member of the National Institute of Education since 1972. Unfortunately, within the limits of this paper, it will be possible only to hit some of the highlights. We will not deal with such important issues as other center models (e.g. the policy centers, the National Laboratory for Early Childhood Education, and NIE's "non-405F centers"), or larger educational R&D system issues.

A Thumbnail History of Federal Educational R&D Centers

1963-72: R&D Center Program Management, USOE

The first competition for R&D centers was held in September, 1963, under the authorization of the Cooperative Research Act. This was nearly two years prior to the passage of the Elementary and Secondary Education Act (ESEA) of 1965 and the authorization of regional education laboratories under Title IV of that act.

The centers represented the government's first venture beyond the support of individual projects and into the realm of Big Science. The new program was:

> ". . . a response to at least three major concerns that had

> built up with respect to prior efforts in educational research and development. In the first place, previous efforts tended to be small scale and fragmented, and consequently the results were neither conclusive nor cumulative. Second, there was a concern about the gap between research and practice. Research results were not being used as a basis for developing new educational materials or practices, and such products as were developed were slow to be adopted in large numbers of schools. Communication between universities and teacher training institutions, state departments of education, and local school systems was poor. Third, it was recognized that the field of education had not attracted the necessary resources from the behavioral sciences and other disciplines, and their active involvement with educational problems was highly desirable." (Mason, 1968)

The concept of a programmatic effort was central. It subsummed several key ideas (adapted from Mason, 1967):

- o Concentration of effort on a significant education problem
- o Interrelated projects and activities planned to achieve defined objectives
- o Responsibility for program management delegated to center administrators with broad responsibility to the Office of of Education
- o Interdisciplinary teams recruited from throughout the university as required by the problems addressed
- o Vertical integration of activities across the full range of research, development, and dissemination functions

These guidelines have remained more or less constant throughout the history of the program. Even during the period of the "program purchase policy" (see below), center programs were expected to have these characteristics. While some have assumed that, with the advent the laboratories and other specialized institutions, the role of the centers had been truncated, no such change in policy was ever formalized. The only major attempt to establish a division of labor between a center and a laboratory was the cooperation of the Learning Research and Development Center (LRDC) at the University of Pittsburgh and Research for Better Schools (RBS) under which the Individually Prescribed Instruction (IPI) program developed at LRDC was field tested and disseminated by RBS.

Several features of the competitions held in 1963-66 are noteworthy. First, the Cooperative Research Act had authority for contracts but not grants (an oddity that was corrected in 1965). However, the competitions followed a grants philosophy. The guidelines were extremely general, and no attempt was made to specify center missions in advance. Thus, the burden was on the applicant to make a

case why a particular mission was of high significance for educational improvement, and the cogency of this argument was a prime aspect of proposal evaluation.

Second, the program was limited largely to universities. Under the Cooperative Research Act only universities, colleges, and state education agencies were eligible for support. With the passage of ESEA in 1965, other groups became eligible. Although applications were received from many other groups, no non-university proposal was ever approved. (An apparent exception, the National Center for Higher Education Management Systems was started under a different program and later transferred to the Center Program.)

Third, proposals were evaluated by a distinguished panel of educators and social scientists, chaired by Ralph W. Tyler. After reading proposals the panel met to select the most promising. The panel made then made site visits before making its final recommendations.

Several aspects of the manner in which the program was organized and managed while it was in the U. S. Office of Education are also worthy of comment. OE was organized by program entities rather than by substantive areas. The centers were all managed by the R&D Center Branch, which never had more than three senior professionals. Thus the staff played generalist roles, each monitoring several centers in diverse mission areas. Panels of outside experts were established to provide continuing evaluations.

Since the centers were established over a period of several years and at different times of the year, they began with staggered time and funding commitments. At that time OE lacked authority to write more than a one-year contract, so the program made moral commitments for five years, but funding levels were decided on a year-to-year basis.

It was soon learned that staggered renewal dates were very difficult to manage. The program was given a specific budget authorization each year. As contract renewals were made during the course of the fiscal year, degrees of freedom were exhausted for making funding decisions on those contracts coming up for renewal at the end of the year. Consequently after the first few funding periods, contract years were adjusted so that all funding decisions for renewals were made at the same time. This point bears on the oft-made assertion that centers have been funded non-competitively since their original establishment. While it is true that organizations outside the program have not had an opportunity to become federally funded R&D centers, there has always been a yearly competition <u>among</u> centers for allocation of funds from the center budget, and in most years there was additional competition between centers and laboratories.

In addition, a "three-five plan" was adopted under which major evaluations were conducted in the third year to determine whether the center should receive an additional five-year commitment or be phased out (Mason, 1968). This is essentially the same plan adopted by the

National Institute of Education in its institutional support policy of 1979 (NIE, 1979). Under this policy a cycle of major reviews was conducted, as a result of which a moral commitment for an additional five years of support was extended to the centers at Pittsburgh, Oregon, Wisconsin, Texas, Stanford, U.C. Berkeley, U.C.L.A., NCHEMS and Johns Hopkins, while support was discontinued for the centers at Harvard, Georgia, and North Carolina State.

An additional feature of the first cycle of major reviews was its linkage to a program for the construction of educational research facilities. As a result of positive program evaluations, modern research facilities were built for the centers at Pittsburgh, Wisconsin, and Stanford.

The centers established during the U.S. Office of Education era had certain things in common:

- o All were units within universities, with the exception of NCHEMS.
- o Cost sharing was expected, but no standards for this were ever established.
- o There was a double layer of management, i.e. center managers and university managers. The university was paid its regular indirect cost rate, but some managerial functions were charged to direct costs. However, some of these were off-set through cost sharing.
- o All centers augmented their staffs with non-faculty appointments.

The centers also varied in some respects:

- o Some were housed administratively in the school of education while others were placed elsewhere.
- o Some had a high proportion of faculty staff while others had a high proportion of research associates and other non-faculty staff.
- o Some made concerted efforts to become involved with local schools and to disseminate their findings and products, while others made minimal efforts in this direction.

During the period of OE administration, the R&D centers were managed by a branch within the Laboratory Division. Ever since that time there has been a tendency to treat the laboratories and centers as if they were one program, although strong arguments can be made that they ought to be separated. In the next two sections the history of policy changes will be described for the combined programs, since they were in fact dealt with in this fashion.

1972-78: Program Purchase Policy, NIE

With the passage of legislation establishing the National Institute of Education, plans were made for the transition of major research programs from OE to NIE. In preparation for the transition a major evaluation of the laboratories and centers was planned. Two teams of evaluation experts were funded to produce alternative designs. A design developed by the team headed by Michael Scriven was chosen (Scriven, 1971). This design called for a series of Specialist Panels to review programs in specific substantive areas. This represented a partial solution to the "apples and oranges problem". In prior years funding allocations had been made on the basis of comparing centers in different mission areas. In this evaluation, at least in the first stage, center and lab programs in the same substantive field were compared. Specialist panel recommendations then went to a Master Panel, which had to reconcile all the recommendations in its final advice to the Director of NIE. (This process was begun under the auspices of OE and completed under NIE.)

Under the Scriven Plan this apparatus was to be kept in place, and the Institute would continue to be concerned about the labs and centers as institutions. However, both programs had been under fire since their inauguration, and the new leadership was committed to the concept of competition as the mechanism of quality assurance. As a consequence a "program purchase" policy was instituted under which each lab and center program was allocated to an appropriate NIE unit and monitored by an NIE specialist who was an expert in that field. The lab or center retained no special status with regard to further funding but would have to compete with other organizations for support of each activity.

This arrangement had the advantage of grouping similar programs and projects for monitoring purposes. There was no concern with whether the activities in each organization added up to some larger whole, and so no mechanism was retained for viewing the organizations holistically. This lack of attention to building the organizational infrastructure of educational research was ironic in that one of NIE's legislative mandates was to "build an effective research and development system" (Sec. 405 of the General Education Provisions Act).

During this period there was a tendency for NIE monitors, feeling a lack of ownership, to be hostile or indifferent to the center programs they were monitoring, As the Institute itself came under increasing criticism (Sproul et al 1978) and declining budgets became the order of the day, the push was on to decrease lab and center funding so as to release scarce funds for other purposes. To counter this move, the labs and centers redoubled their efforts to apply political pressure to earmark a portion of the NIE budget for labs and centers. Thus the intent of the program purchase policy of placing labs and centers on the same competitive footing as other organizations was thwarted. The final denoument was a reversal of the program purchase policy.

1979-83: Institutional Support Policy, NIE

The period 1975-78 was a long transitional period during which NIE's policy toward the labs and centers was re-examined and ultimately changed. In 1975 a group of consultants chaired by Roald Campbell was convened to examine the R&D Funding Policies of the National Institute of Education (NIE 1975). This group felt that special institutional relationships were quite appropriate, but that NIE should consider a broader array than the two represented by the existing labs and centers. They also felt that there was a wide range of quality represented in the programs and projects of the labs and centers and that the Institute should undertake a thorough process of evaluation to determine which organizations should be granted special status. The National Council on Educational Research (NCER), NIE's policy-making body, adopted a resolution in July, 1976 implementing, these recommendations.

Meanwhile the Congress decided that it wanted an independent look at the issue. As part of the legislation extending NIE's authorization in 1976, Congress established a panel of educators to review and report on the 17 regional educational laboratories and research and development centers. In first an interim report and then a final report, this group strongly endorsed the "concept of research and development centers and regional educational laboratories and affirms the importance of maintaining and improving the stability and quality of existing institutions". The panel recommended that the Institute enter into long-term institutional agreementswith seven of the nine centers and seven of the eight laboratories, and recommended appropriate planning or strengthening aimed at such an agreement for the others (Panel..1979).

Concurrent with the Panel's deliberations, NIE had mounted a comprehensive review process for determining special relationship status. The whole process was capped by the issuance of an administrative directive in January 1979, "Long-term Special Institutional Agreements with the Seventeen Existing Laboratories and Centers" (NIE 1979), and the selection of institutions to receive five-year commitments and three-year contracts beginning in December, 1979.

Also during 1979 NIE was reorganized, resulting in the current configuration of programs and units. The R&D Center Program per se was not reinvented. Rather, center programs continued to be monitored by relevant units throughout the Institute. However, each center was also assigned an institutional monitor (IM) who was responsible for dealing with top management of the center and coordinating the work of NIE program monitors. A Laboratory and Center Coordinator was established in the Office of the Director to coordinate both programs at the Institute level. Thus the Institute had a dual set of organization and management arrangements: regular line divisions with supervisory authority, and a cross-cutting set of lab/center reporting lines having coordinating responsibilities only.

Issues on R&D Centers

Have the Centers been Programmatic?

If there has been one leitmotif in the many evaluations of R&D centers it has been that some centers, at some points in their history, have been collections of projects rather than true mission-focused programs. Support for the Harvard R&D Center was discontinued for precisely this reason, not because of the quality of its work. Harvard argued that any attempt to plan or coordinate research had a negative impact on the work and that the nature of research was such that it required a maximum of principal investigator autonomy and flexibility (Herzog, 1972). On the other hand, the government argued that it could support individual projects more cheaply in its other programs, and if it was going to pay for the managerial apparatus of a center then the managers should attempt to integrate the work of the center.

The same issue was still with us as recently as 1982. The Education Department's Service Delivery Assessment concluded that

> About half of the Centers appeared to be guided by a very strong sense of purpose with respect to influencing policymaking and practice in their respective areas of inquiry. Other Centers appeared conscious of the ultimate effects of their R&D efforts, but their avowed mission was more one of doing high quality research and taking a more passive approach to influencing policy making and practice. (Education Department, 1982)

It is legitimate to ask whether program management is possible, or whether educational R&D is still a cottage industry. Part of the answer lies in the perception that some of the centers have apparently succeeded in this endeavor. The history of the Pittsburgh Center's search for integrative approaches is instructive. LRDC began with the linear conception of research common in the 60's, but soon found that there were difficult communication gaps between researchers and practitioners. The emergence of the new role of the curriculum developer as someone who moved back and forth between the worlds of the researcher and the practitioner showed promise for a time. As the Center grew larger, sub-division into programs seemed necessary, but created new schisms as well. An attempt at matrix management emphasized interdependencies and interconnections rather than hierarchies. Gradually there emerged an "epistemic community" which held shared criteria as to what was relevant to LRDC's work and as to standards of judgment. (Holzner and Salmon-Cox, 1977)

Clearly there are many different aspects to this issue.

- How can different <u>research</u> projects be coordinated?
- How can the several RDD&E functions be integrated?

- How can researchers from different disciplines contribute to the solution of specified problems in mutually supportive and cumulative ways?

- How can research be made relevant to practice, and how can education problems be stated in researchable terms?

These can all be seen as both problems in the development of educational research and as problems of research organization and management. Modern theories of organization and management have departed quite radically from traditional theories (Weick1979, March, 1976). Experience has certainly shown that in educational research the element of uncertainty is very large and that the ability of any group to specify in detail the tasks and costs of its work for long periods is highly questionable at best.

We must conclude that our knowledge of how to organize and manage programmatic R&D is still rudimentary. The Centers Program should be considered as a continuing test of the hypothesis that, through careful planning and management, it is possible to organize large scale interdisciplinary efforts for the accomplishment of educational objectives. There is no assumption that this is a linear process, and it is recognized that there is a large element of uncertainty. What is involved is an organizational commitment to an ongoing effort to integrate activities of a center and search for synergy. Planning needs to be based on new perspectives on organizations and planning which stress the emergent nature of organizational action (Clark, McKibbin, and Malkas, 1980 and 1981).

Given the fact that some Centers seem to have succeeded to a degree in organizing their work programmatically, NIE would do well to initiate an "effective centers" research program in order to explicate those approaches which appear to work best in given contexts and for research areas in different stages of maturity.

The Locus of Initiative Issue

Two contradictory principles have been enunciated at various times concerning who should determine the missions and research agendas of centers. One is that "the one who pays the piper should call the tune". This perspective is related to the Institute's accountability for the expenditure of public funds. Furthermore the whole federal planning and budgeting process is structured around the statement of goals and objectives, which suggests that government program managers must specify what the funds are to be used for.

On the other hand, the norms of the scientific community favor arrangements which give the primary responsibility for identifying needed research and designing appropriate projects to investigators in the field. Studies in the history and sociology of science support this

view. Particularly given the fact that educational research is still an immature field, the government should try to find creative sparks and fan them while eschewing all attempts to dictate the content of research projects (according to this view).

The government has often been faulted for "flip-flopping" on this issue, and this has been cited as a source of instability by the centers. Indeed, one can find proponents of both points of view at the present time. We hear both that we should depend on field initiative, and that the work supported should be responsive to the Secretary's priorities.

There are two concepts which can help us deal with this tension. In the first place, the centers can be seen as one part of a portfolio of research and related activities dealing with a particular educational problem. A typical research program at NIE might be composed of an R&D center and/or one or more center programs; one or more laboratory programs, a grants program, and some contracts. These funding mechanisms represent the complete range of government/field initiatives. Grants represent the support of field initiated work; contracts are procured to achieve specific governmental purposes; Lab programs (at the present time) represent work which is undertaken as a result of a process of regional needs assessment and program design.

The basic concept of what a center should be suggests that the Institute should "lean" toward the field initiative pole. For the government is proposing to fund organizations which have the capability to manage a process of problem identification, program design, and implementation. The government is supporting not only the specific projects and programs, but also the organizational capacity to manage complex undertakings. However, within this context, there is plenty of room for negotiation between NIE and center management and for the development of cooperative arrangements.

The second concept which may be helpful is that of levels of specificity. When the centers were originally funded under the Cooperative Research Act, no attempt was made to specify even the most general missions for the centers. Proposers were invited to identify and justify their own missions, and the persuasiveness of their case was an important part of the proposal evaluation process. In the current competition there is relatively little controversy concerning the government's need to specify the general missions of the centers to be funded; the issue is how far it should go in specifying the programs, projects, tasks, R&D functions, organizational structure, etc. within that mission area. One suggestion is that mission statements might go one step down the scale of generality from general mission, but no further. However, this issue remains an important one to be addressed by the Study Groups.

A Potpourri of Additional Issues

Problems of University Sponsorship. Almost all centers have been sponsored by universities and, under current statuatory constraints this situation can be expected to continue. What are the endemic problems of this context?

A. The norms governing individual faculty promotion vs. the organizational norm of programmatic research in centers

B. The norms of academic departments vs. those of professional schools

C. Administrative placement of the center in or outside of the school of education

D. Ability to attract faculty from relevant schools and departments

E. The mix of research, development, demonstration, dissemination and technical assistance functions undertaken by a center

F. The mix of faculty and non-faculty appointments

G. Relationships to research and practitioner communities and organizations outside the university

Critical Mass vs. Network Sponsorship. The notion of a "critical mass" of talent was central to the original centers. It was never thought that any center would have all the "best people" on its staff, but that there would be a sufficient concentration of good people from a variety of disciplinary backgrounds that their interaction would be highly productive. Currently there are those who would like to leave open the question of whether a center should be entirely in one place, i.e. it might be "multi-nucleated" or a network of individuals. However, it is very difficult to coordinate the work of staff at one site; given multiple sites the difficulties mount by orders of magnitude. Networks of individuals are very relevant for some purposes, but NIE has other means of supporting such activities and it is questionable whether it should blur the center concept by introducing such flexibility.

The Relationship of Research and Practice. While research is viewed as the primary responsibility of centers, each must have some strategy for seeking to improve educational practice. Considerations:

A. What model or framework underlies the organization of the center's work? How to avoid the Scylla and Charyibdis of of linear top-down models and naive interactive models? Linear models are now widely rejected, but in the view of

the present author the problems of interactive models are not well understood. For example:

- o It is fine to say that researchers and practitioners should have (status) parity, but naive to think that they have the same kinds of expertise; a division of labor is needed under which they address themselves to different aspects of the problem.

- o Interactive models tend to deteriorate into exclusive concern with local improvement to the exclusion of the search for generalizable knowledge and for ways to make that knowledge useful to those in other contexts. In extreme form they reduce to the idea that every practitioner must invent his or her own wheel.

B. Does the mix of R&D functions represent the "vertical integration" of these functions (i.e. the center takes responsibility for the full range of functions), or does it concentrate on a limited range of functions while arranging with other organizations to undertake others?

C. What kinds of working relationships does the center have with schools and school districts, state and intermediate education agencies, regional laboratories, professional associations, etc.?

D. Do the tactics for educational improvement emphasize information dissemination, technical assistance, or professional development?.

Balancing the Criteria of Scientific Quality and Educational Significance. The truth tests and utility tests of researchers and practitioners are drawn from different frameworks (Weiss and Bucuvalas, 1980). How does the center attempt to reconcile and integrate these frameworks? What mechanisms does the center employ to ensure quality and relevance of its work? Does it employ an advisory group and if so what kinds of people are appointed to it?

NIE Program Management Issues

Responsibility for Monitoring Centers and Center Programs. Currently the programs of centers are monitored by different units in NIE. The institutional monitor may be in the same or a different unit. In some cases, these units are all within one division, but in others they are spread throughout the Institute. This raises an interesting question. If the work of a center is supposed to be integrated around a specific mission, how can it be that its activities are so diverse that they can be monitored by different NIE units? While it is quite possible for a program to have dual relevance (e.g. a program on teaching

mathematics is concerned with both curriculum and pedagogy), such an arrangement seems to discount the importance of center missions. The implication is that the main focus of programmatic integration is at the program level not the institutional level.

This is probably an instance in which an arrangement that made sense for monitoring the laboratories (because their programs are quite diverse) was applied to the centers uncritically. If the missions of the new centers are to be taken seriously, thoughtful consideration should be given to having each center monitored by a single program unit. Where programs have a dual relevance, it would be quite possible to establish a liaison relationship with the second unit. In any case it is doubtful that the present system of assigning an institutional monitor is a sufficient integrative mechanism. Institutional monitors tend to stay in the background except at times of major reviews and have limited leverage in dealing with program monitors. (In most cases it is not a supervisory relationship.)

Separate Policies and Arrangements for Labs and Centers. For many years "labsandcenters" has been one word in the lexicon of government program managers. Yet, if they are different kinds of organizations with different purposes, do they not need different policies and procedures?

Research Policy or Institutional Policy? At the present time NIE tends to be preoccupied with issues of institutional arrangements, not educational research problems. A "figure/ground reversal" may be required. If whole centers are embedded in research programs and are perceived to be one element in the portfolio of that program, then substantive issues will come to the fore and and institutional and program management issues, important as they are, will become the ground. It would still be necessary to have consistent policies and procedures for dealing with centers, and a Center Coordinator in the Office of the Director could take this responsibility.

Long Term vs. Short Term Considerations. At the core of the R&D center concept is the commitment to a mission over relatively large blocks of time. The centers are asked to develop long range plans which are progressively refined during the period of NIE's support. Over the years the government has been faulted many times for changing signals in mid-stream and asking the centers to pursue some hot new topic. Given changes in political administrations and top leadership some of this may be inevitable, and some flexibility is desirable. But perhaps the portfolio concept can help to ameliorate this problem. Centers need to be seen as "long term investments" while projects (whether funded by grants or contracts) are "short term investments". Obviously, for such an approach to be viable, it will be necessary to have an NIE appropriation which is more balanced in its allocation of funds to long and short term activities. Also pertinent here is a recommendation of the White House Science Council that, "...the Congress and the Office of Management and Budget. . . authorize funding for R&D programs on a predictable multiyear basis so that staffing levels and research

activities at the Federal laboratories can be properly planned" (Federal Laboratory Review Board, 1983).

Conclusion

This paper has attempted to present a sense of the history of federal efforts to support major R&D centers in education and of the major issues faced in 1983 as the National Institute of Education faces decisions concerning the future directions of the program. In helping to fulfill its responsibility to build an effective R&D system for edcuation, NIE should direct some of its admitedly scarce resources toward the empirical study of these important program design and managment issues.

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